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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,004	07/24/2001	Guido Schaffner	3926.030	5606

7590

08/11/2003

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EXAMINER

VANOY, TIMOTHY C

ART UNIT

PAPER NUMBER

1754

DATE MAILED: 08/11/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09-912,004

Applicant(s)

SCHAFFNER ET AL.

Examiner

VAN OY

Group Art Unit

1754

—Th MAILING DATE of this communication appears on th cover sheet beneath th correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

THE AMENDMENT MAILED ON JULY 7 2003

☒ Responsive to communication(s) filed on \_\_\_\_\_

☒ This action is FINAL.

- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

## Disposition of Claims

☒ Claim(s) 9-18 is/are pending in the application.

Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 9-18 is/are rejected.

☒ Claim(s) 12-16 is/are objected to.

☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☒ All ☐ Some\* ☐ None of the:

☒ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other \_\_\_\_\_

Office Action Summary

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Objections***

a) Since claim 9 has been amended to recite the singular "a noble metal", then there is no antecedent basis for the plural "the noble metals" recited in claims 12-16 ("the respective noble metals" in claim 15").

### ***Specification***

The amendment mailed on July 7, 2003 (paper no. 6) is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: amending the abstract to recite that the nitrogen oxide storing and catalytically effective solid *is free of silver and silver compounds* (italics added for emphasis).

The applicants are required to cancel the new matter in their reply to this Office action.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

a) Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Claim 9 has been amended to recite the limitation that the nitrogen oxide storing and catalytically effective solid is free of *silver and silver compounds* (italics added for emphasis), which is a limitation that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of this claimed limitation.

The applicants are reminded that if claim 9 is amended by deleting "silver and silver compounds", then claim 18 must be canceled, since the resulting claim 9 would be a duplicate of claim 18.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having "ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 890 389 A1.

In col. 4, "Example B" in EP 0 890 389 A1, the use of catalyst of the formula: "Ag-Al<sub>2</sub>O<sub>3</sub>//Pt/Rh-Al<sub>2</sub>O<sub>3</sub>" is disclosed for treating the exhaust gas emitted from an internal combustion engine operating under what appears to be primarily under fuel-lean conditions (note that Fig. 6 appears to be a graph of NO<sub>x</sub> concentration on the y axis vs. lambda conditions on the x axis for the treatment of an exhaust gas using the "Ag-Al<sub>2</sub>O<sub>3</sub>//Pt/Rh-Al<sub>2</sub>O<sub>3</sub>" catalyst, wherein Fig. 6 shows that the conditions of the exhaust gas appear to be "lean" (i. e. "mager  $\lambda > 1$ ") for 10 minutes out of 12, *in as much as* the

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discussion of Fig. 6 in columns 7 and 8 in EP 0 890 389 A1 discloses that the O<sub>2</sub> concentration of what appears to be the exhaust gas is 8% for “mager  $\lambda > 1$ ”). Fig. 6 also shows the concentration of NO<sub>x</sub> spiking from about 1,000 ppm to about 5,000 ppm when the conditions of the exhaust gas are changed to fuel rich (thereby, fairly suggesting that the composition stores NO<sub>x</sub> when the exhaust is emitted from a “fuel lean” engine burn mode, and releases the stored NO<sub>x</sub> when the exhaust gas is emitted from a “fuel-rich” engine burn mode), in a manner that is submitted to render obvious the limitations of (at least) applicants’ claims 9, 10, 17 and 18.

The difference between the applicants’ claims and EP 0 890 389 A1 is that applicants’ claims 9 and 18 report that the carrier is at least 50% zirconia (whereas the catalyst of “Example B” and Fig. 6 in EP 0 890 389 A1 reports the use of alumina as the support).

Col. 2 Ins. 4-8 in EP 0 890 389 A1 appears to list materials that may be used as the catalyst support - to include the alumina of “Example B” in EP 0 890 389 A1 as well as the zirconia of applicants’ claims 9 and 18.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to modify* the process and composition described in EP 0 890 389 A1 *by substituting* the zirconia described in col. 2 Ins. 4-8 in EP 0 890 389 A1 *in lieu of* the alumina used in the catalyst of “Example B”, in the manner set forth in at least applicants’ claims 9 and 18, because such substitution of one known functional equivalent in lieu of another known functional equivalent is *prima facie* obvious: please

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see the discussion of the *In re Fout* 675, F.2d 297, 213 USPQ 532 court decision set forth in section 2144.06 in the MPEP.

Notice that col. 2 Ins. 48-49 mentions the "Pellets" and "Extrudate" of applicants' claim 11.

Also, note that col. 2 In. 53 mentions a "Atomare Mischung", fairly suggesting the "atomic mixture" of applicants' claim 12.

Also, note that "Ag-Al<sub>2</sub>O<sub>3</sub>//Pt/Rh-Al<sub>2</sub>O<sub>3</sub>" fairly suggests that the Pt and Rh are deposited on the same alumina carrier, as set forth in applicants' claim 13.

Also, note that the "pulvermischung" of col. 3 In. 1 and the "Pulver B" of col. 4 In. 19 fairly suggests the "powder mixture" of applicants' claim 14.

Also, note that the "Ag-Al<sub>2</sub>O<sub>3</sub>//Pt/Rh-Al<sub>2</sub>O<sub>3</sub>" described in col. 4 Ins. 10-36 appears to be a layered composition (as set forth in applicants' claim 15), and also has catalytic components on different supports (as set forth in applicants' claim 16).

### ***Response to Arguments***

The applicants' arguments submitted in the amendment mailed on July 7, 2003 (paper no. 6) have been fully considered but they are not persuasive.

a) *The applicants argue that EP 0 890 389 A1 describes a Ag-Al<sub>2</sub>O<sub>3</sub>//Pt/Rh-Al<sub>2</sub>O<sub>3</sub> type catalyst, however the applicants' catalyst is patentably distinct from this catalyst in that the applicants' catalyst excludes silver and silver compounds and requires a microporous support that is at least 50% zirconium oxide. While the examiner considers the substitution of the alumina with zirconium oxide to a prima facie obvious*

*substitution of one known functional equivalent in lieu of another known functional equivalent, the applicants have explained in the introductory portion of their specification that when the catalyst uses an alumina support, the relationship of the lean motor operating phase to the rich motor operating phase was found to be problematic. It was found that in a lean-rich cycle (with durations of lean-rich phases) that a maximum NO<sub>x</sub> conversion of 65% could be achieved at a temperature of 350 °C.*

The argument is not persuasive for at least the following two reasons:

- (i) there is no 35USC112, 1<sup>st</sup> paragraph support for the exclusion of silver and silver compounds from the catalyst, such that the catalyst of the applicants' independent claims would be patentably distinct from the catalyst requiring the presence of Ag in the catalyst described in "Pulver B" in col. 4 in EP 0 890 389 A1, and
- (ii) A comparison of the prior art's alumina-based catalyst exhibiting a NO<sub>x</sub> conversion of 65% at 350 °C (as set forth in the applicants' arguments) to the NO<sub>x</sub> conversion of about 63% at 350 °C illustrated in applicants' fig. 1 for their zirconia based catalyst only provides evidence that the substitution of zirconia for alumina is in fact prima facie obvious, since the NO<sub>x</sub> conversion percentages are approximately the same at 350 °C.

In order for the comparison to be fair, all things (i. e. the catalytic components and the operating conditions) must be the same, *but for* the alumina of EP 0 890 389 A1 and the zirconia of the applicants' claimed catalyst.

Finally, it appears that the applicants are comparing their catalyst to a catalyst of EP 0 927 571 A1 in the discussion set forth in paragraph no.s 0006 and 0007 in the

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applicants' specification (not to the catalyst of EP 0 890 389 A1 applied in the 103 rejection).

b) *The applicants argue that there remains a need to denitrify exhaust gases emitted from an internal combustion engine operated primarily under lean conditions, even when the conditions are switched to rich conditions for (relatively) short periods of time.*

There is no difference in the manner in which the engines are operated in comparing the limitations of the applicants' independent claims to the fuel-rich/fuel poor conditions illustrated in figs. 6 and 7 in EP 0 890 389 A1. Note that figs. 6 and 7 illustrated in EP 0 890 389 A1 illustrate the engine operating conditions are cycled between predominately lean conditions ( $\lambda > 1$ ) and shorter time periods of rich conditions ( $\lambda < 1$ ) – in the same manner required in the applicants' claims.

The applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). The applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event that a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

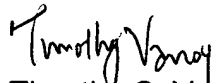
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 703-308-2540. The examiner can normally be reached on 9 hr. days Mon-Thurs, and Fri. afternoons.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Timothy C. Vanoy  
Patent Examiner  
Art Unit 1754

Timothy Vanoy/tv  
August 8, 2003

  
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